

Amendments to the Claims:

Claims 2-5, 7, 12-15, and 17-31 are currently pending with claims 7, 20, 23, 26, 29, and 31 having been amended. This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1 (Canceled).

Claim 2 (Previously Presented): A method for measuring thickness of a thin film, the method comprising:

irradiating white light onto an area of a surface of a sample having an optically transparent thin film thereon, during polishing;

detecting reflected light from said area of said sample due to the irradiation with said white light; and

determining the thickness of said optically transparent film on said area by using information from the spectral waveform of the reflected light thus detected;

wherein, in said step of determining the film thickness, the film thickness is determined by using information from the spectral waveform of the reflected light from said area which is selected from said surface by using information from at least one of the spectral waveform, reflectivity of the surface of the sample, and a frequency spectrum in the spectral waveform, on the basis of a characteristic quantity of the spectral waveform of the reflected light from said sample by the irradiation of said white light.

Claim 3 (Previously Presented): The method for measuring the thickness of a thin film according to claim 2, wherein the characteristic quantity of the spectral waveform of said reflected light is based on reflection intensity of the spectral waveform of said reflected light.

Claim 4 (Previously Presented): The method for measuring the thickness of a thin film according to claim 2, wherein the characteristic quantity of the spectral waveform of said reflected light is based on frequency spectrum intensity of the spectral waveform of said detected reflected light.

Claim 5 (Original): The method for measuring the thickness of a thin film according to claim 2, wherein the characteristic quantity of the spectral waveform of said reflected light is the similarity of the spectral waveform based on a previously measured film thickness distribution.

Claim 6 (Canceled).

Claim 7 (Currently Amended): A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto a select area of the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting the reflected light ~~generated by~~ reflected from said select area of said sample due to the irradiation of said white light, by time division; and

determining the thickness of said optically transparent film at prescribed regions of the surface of said sample, by using information for a characteristic quantity of the spectral waveform of the reflected light thus detected by time division,

wherein the select area is selected based on information from at least one of the spectral waveform, reflectivity of the surface of the sample with respect to the white light, and a frequency spectrum of the spectral waveform.

Claims 8-11 (Canceled).

Claim 12 (Previously Presented): A method for measuring thickness of a thin film comprising:

irradiating white light onto a surface of a sample having an optically transparent thin film thereon, during polishing;

detecting light reflected from an area of said sample which is selected from said surface by using at least one of a spectral waveform, reflectivity of the surface of the sample with respect to the white light, and a frequency spectrum of the spectral waveform, from the reflected light from said sample by the irradiation of said white light; and

determining the thickness of said optically transparent film by using information for a characteristic quantity of the spectral waveform of the reflected light from the prescribed regions thus detected.

Claim 13 (Previously Presented): The method for measuring the thickness of a thin film according to claim 12, wherein the information for a characteristic quantity of the spectral waveform of said reflected light comprises information about the reflection intensity of the spectral waveform of said reflected light.

Claim 14 (Previously Presented): The method for measuring the thickness of a thin film according to claim 12, wherein the information for a characteristic quantity of the spectral waveform of said reflected light comprises information about a frequency spectrum intensity of the spectral waveform of said detected reflected light.

Claim 15 (Previously Presented): The method for measuring the thickness of a thin film according to claim 12, wherein the information for a characteristic quantity of the spectral waveform of said reflected light comprises information about similarity of the spectral waveform based on a previously measured film thickness distribution.

Claim 16 (Canceled).

Claim 17 (Previously Presented): A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto a select area of the surface of a sample whereon an optically transparent thin film is formed, during polishing, while supplying an optically transparent fluid on the surface of the sample;

detecting reflected light reflected from said select area of said sample due to the irradiation of said white light; and

determining the thickness of said optically transparent film by using information for the spectral waveform of the reflected light thus detected,

wherein the select area is selected based on information for at least one of the spectral waveform, reflectivity of the surface of the sample with respect to the white light, and a frequency spectrum of the spectral waveform.

Claim 18 (Previously Presented): The method for measuring the thickness of a thin film according to claim 17, wherein the thickness of said optically transparent film is determined using information for reflection intensity of the spectral waveform of said reflected light.

Claim 19 (Previously Presented): The method for measuring the thickness of a thin film according to claim 17, wherein the thickness of said optically transparent film is determined using information for reflection intensity of the spectral waveform of said reflected light.

Claim 20 (Currently Amended): A method for measuring the thickness of a thin film, comprising the steps of:

irradiating white light onto the a select area of a surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting the reflected light ~~generated by~~ reflected from said select area of said sample due to the irradiation of said white light, by means of an optical glass having a similar index of refraction to that of the polishing fluid; and

determining the thickness of said optically transparent film, on the basis of the spectral waveform of the reflected light thus detected,

wherein the select area is selected based on information from at least one of the spectral waveform, reflectivity of the surface of the sample with respect to the white light, and a frequency spectrum of the spectral waveform.

Claim 21 (Previously Presented): The method for measuring the thickness of a thin film according to claim 20, wherein the thickness of said optically transparent film is determined using information for the reflection intensity of the spectral waveform of said reflected light.

Claim 22 (Previously Presented): The method for measuring the thickness of a thin film according to claim 20, wherein the thickness of said optically transparent film is determined using information for the reflection intensity of the spectral waveform of said reflected light.

Claim 23 (Currently Amended): A device for measuring the thickness of a thin film, comprising:

means for irradiating white light onto a select area the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting means for detecting the reflected light ~~generated by~~ reflected from said select area of said sample due to the irradiation by said irradiation means;

investigation region setting means for setting regions for determining the thickness of said optically transparent film, by using the information of any one of the spectral waveform of the reflected light detected by said detecting means, the reflectivity of the surface of said sample with respect to said white light, or the information for the frequency spectrum of said spectral waveform; and

film thickness calculating means for calculating the thickness of said optically transparent film by using information for the spectral waveform of the reflected light from the regions set by said investigation region setting means,

wherein the select area is selected based on information from at least one of the spectral waveform, reflectivity of the surface of the sample with respect to the white light, and a frequency spectrum of the spectral waveform.

Claim 24 (Previously Presented): The device for measuring the thickness of a thin film according to claim 23, wherein said film thickness calculating means determines the

thickness of said optically transparent film by using information for the reflection intensity in the spectral waveform of said reflected light.

Claim 25 (Previously Presented): The device for measuring the thickness of a thin film according to claim 23, wherein said film thickness calculating means determines the thickness of said optically transparent film by using information for the reflection intensity in the spectral waveform of said reflected light.

Claim 26 (Currently Amended): A device for measuring the thickness of a thin film, comprising:

means for irradiating white light onto a select area of the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting means for detecting the reflected light ~~generated by~~ reflected from said select area of said sample due to the irradiation said irradiation means;

investigation region setting means for setting detection regions for determining the thickness of said optically transparent film, on the basis of the spectral waveform of the reflected light detected by said detecting means;

means for extracting a characteristic quantity of the spectral waveform of the reflected light generated by the detection regions on said sample as set by said investigation region setting means; and

film thickness calculating means for calculating means the thickness of said optically transparent film at said detection regions on the basis of said characteristic quantity,

wherein the select area is selected based on information from at least one of the spectral waveform, reflectivity of the surface of the sample with respect to the white light, and a frequency spectrum of the spectral waveform.

Claim 27 (Previously Presented): The device for measuring the thickness of a thin film according to claim 26, wherein said film thickness calculating means determines the thickness of said optically transparent film by using information for the reflection intensity of the spectral waveform of said reflected light.

Claim 28 (Previously Presented): The device for measuring the thickness of a thin film according to claim 26, wherein said film thickness calculating means determines the thickness of said optically transparent film by using information for the reflection intensity of the spectral waveform of said reflected light.

Claim 29 (Currently Amended): A device for measuring the thickness of a thin film, comprising:

means for irradiating white light onto a select area of the surface of a sample whereon an optically transparent thin film is formed, during polishing;

detecting means for detecting the reflected light ~~generated by~~ reflected from said select area of said sample due to the irradiation by said irradiation means;

measurement region setting means for setting regions for determining the thickness of said optically transparent film, on the basis of the spectral waveform of the reflected light detected by said detecting means;

characteristic quantity extracting means for extracting a characteristic quantity of a plurality of spectral waveforms of the reflected light by detecting, by time division, the reflected light from the regions set by said measurement region setting means; and

film thickness calculating means for calculating the thickness of said transparent film, at the regions for determining said film thickness, by using information for the characteristic quantity extracted by said characteristic quantity extracting means,

wherein the select area is selected based on information from at least one of the spectral waveform, reflectivity of the surface of the sample with respect to the white light, and a frequency spectrum of the spectral waveform.

Claim 30 (Previously Presented): The device for measuring the thickness of a thin film according to claim 29, wherein said characteristic quantity extracting means extracts information for the reflection intensity of a plurality of spectral waveforms of said reflected light, as the characteristic quantity for the plurality of spectral waveforms of the reflected light.

Claim 31 (Currently Amended): The device for measuring the thickness of a thin film according to claim 29, wherein said characteristic quantity extracting means extracts information for the frequency spectrum intensity of a plurality of spectral waveforms of said reflected light, as the characteristic quantity for the plurality of spectral waveforms of the reflected light.